

Severe Acute Respiratory Syndrome (SARS)

REPORT IMMEDIATELY

Section 1:

ABOUT THE DISEASE

A. Etiologic Agent

Severe Acute Respiratory Syndrome (SARS) is caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV).

B. Clinical Description

SARS is a viral respiratory illness that typically begins with a high fever (temperature $>100.4^{\circ}\text{F}$ [$>38.0^{\circ}\text{C}$]). Other symptoms may include chills, headache, general malaise, and body aches. Some people also develop mild respiratory symptoms at the onset of illness. About 10–20% of patients have diarrhea. After 2–7 days, symptoms may worsen. SARS patients may develop a non-productive cough, shortness of breath, and respiratory distress; most patients develop pneumonia and many develop acute respiratory distress syndrome (ARDS). Respiratory relapses may occur. SARS causes substantial morbidity and mortality; the case-fatality rate among SARS cases in 2003 was over 5%.

C. Vectors and Reservoirs

The reservoir for SARS-CoV is not definitively known. Initial studies in Guangdong Province, China showed similar coronaviruses in some animal species sold in markets (e.g., masked palm civet cat). Further study into this aspect of SARS is ongoing.

D. Modes of Transmission

SARS appears to be spread from person to person through infectious respiratory secretions, droplet-borne transmission, or close person-to-person contact. Close person-to-person contact is typically described as having cared for, lived with, or had direct contact with respiratory secretions and/or body fluids of a person with SARS. SARS-CoV is thought to be transmitted most effectively by respiratory droplets produced when an infected individual coughs or sneezes (droplet-borne spread). It appears that some SARS-CoV-infected individuals are capable of transmitting SARS-CoV through a mechanism more closely resembling airborne transmission, and these so-called “super-spreaders” can efficiently infect large numbers of individuals in hospitals and other similar settings. Other modes of transmission for SARS-CoV are possible, including zoonotic transmission from infectious reservoir animals and transmission via feces, but there is little information at present regarding these. Laboratory-acquired SARS has been reported.

E. Incubation Period

The incubation period for SARS is 2–10 days, with a median of 5 days.

F. Period of Communicability or Infectious Period

The communicable period for SARS is not yet completely defined. Some studies suggest that transmission generally does not occur prior to the onset of clinical signs and symptoms and that the maximum period of communicability is less than 21 days.

G. Epidemiology

SARS was first described in February 2003. It is thought to have originated in the Guangdong Province of China, with initial infectious human cases occurring sometime around November 2002. By July 2003, multiple major international outbreaks of SARS had resulted from spread from an initial outbreak in Hong Kong to other countries, including Canada, China, Taiwan, Singapore, and Vietnam. The disease then spread to 20 other major locations following standard airline travel routes. The largest proportion of cases occurred within hospitals and among hospital workers and their families. According to the World Health Organization (WHO), a total of 8,098 people worldwide were diagnosed with SARS during the 2003 outbreak. Of these cases, 774 died (9.6%). In the U.S., eight people had laboratory-confirmed evidence of SARS-CoV infection. All of these cases appeared to have been imported from other countries where SARS was widespread. No cases were identified in Massachusetts. Further spread of SARS within the U.S. did not occur.

In 2004, although several cases of SARS were reported in China, there were no documented cases of human-to-human transmission.

Individuals at greatest risk for SARS-CoV infection include those who have recently traveled to a country where community-wide spread of SARS has been documented and those who have had direct, close contact with someone who is ill with SARS.

H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.



Section 2:

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report any suspect or confirmed case of SARS or infection with the SARS-associated coronavirus diagnosed by a health care provider.

Presumptive diagnosis of SARS depends upon both clinical criteria and exposure criteria as defined by the case definition. The case definition for SARS continues to change as more is learned about the virus, but it encompasses assessment of the following variables:

- ◆ Symptoms, including:
 - Fever,
 - Cough, shortness of breath, or other lower respiratory tract symptoms,
 - In some cases, progressive pneumonia or ARDS, and
 - Other probable symptoms including chills, rigor, malaise, myalgia, diarrhea, sore throat, and headache.

- ◆ Age of the patient;
- ◆ Travel history;
- ◆ Close contacts; and
- ◆ High-risk occupation.

The most up-to-date information about the SARS case definition can be found on the Centers for Disease Control and Prevention (CDC) website at www.cdc.gov/epo/dphsi/casedef/case_definitions.htm, on the MDPH website at www.mass.gov/dph, or by contacting an epidemiologist at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850.

B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI) tests for SARS-CoV with the SARS-CoV enzyme immunoassay (EIA) and the SARS-CoV real-time detection polymerase chain reaction (RTD-PCR) assay. Both tests will be performed on specimens collected from patients with suspect SARS after individual case review and approval by the MDPH Division of Epidemiology and Immunization, at (617) 983-6800 or (888) 658-2850. All specimens with positive results will be forwarded to the CDC for confirmation. To identify other potential causes of respiratory disease, the SLI will also perform rapid antigen testing for respiratory syncytial virus (RSV) and influenza A and B, and the SLI is currently validating molecular diagnostic tests for common non-SARS respiratory pathogens.

For more information on testing and specimen submission, call the SLI Virus Serology Laboratory at (617) 983-6396.



Section 3:

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- ◆ To rapidly identify imported cases of SARS with the goal of preventing secondary cases.

B. Laboratory and Health Care Provider Reporting Requirements

SARS is reportable to the local board of health (LBOH). Due to the rarity and potential severity of SARS, the MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of SARS or SARS-CoV, as defined by the reporting criteria in Section 2A. If this is not possible, call the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 any time of day or night.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of SARS-CoV infection shall immediately report such evidence of infection, directly by phone, to the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850.

Note: In all likelihood, the LBOH will not receive notification of confirmed cases without the knowledge of the MDPH Division of Epidemiology and Immunization since, at the time of publication, confirmatory testing was only available at the SLI and the CDC. However, the LBOH could be the initial recipient of a report of a suspect case.

C. Local Board of Health (LBOH) Reporting and Follow-up Responsibilities

Reporting Requirements

MDPH regulations (*105 CMR 300.000*) stipulate that SARS is reportable to the LBOH and that each LBOH must report any case of SARS or suspect case of SARS, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS) using the MDPH *SARS Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Reporting Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

Case Investigation

If a LBOH learns of a suspect or confirmed case of SARS or SARS-CoV, they should immediately call the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 (24 hours a day).

1. Case investigation of suspect or confirmed cases of SARS in Massachusetts residents will, in most circumstances, be coordinated by the MDPH Division of Epidemiology and Immunization.
2. The LBOH may be asked to assist in completing an official MDPH *SARS Case Report Form* (found at the end of this chapter) by interviewing the case and others who may be able to provide pertinent information. Most of the information required on the form can be obtained from the health care provider or from the medical record. Use the following guidelines to assist in completing the form:
 - a. Accurately record the case's demographic information.
 - b. Record clinical information, including date of symptom onset, date of fever onset, whether or not a chest X-ray or CT scan was performed, date of first health care evaluation, if admitted to an intensive care unit (ICU), and whether or not the patient died as a result of illness.
 - c. Clearly record the patient's epidemiologic risk factors, including occupation and detailed contact and travel history.
 - d. Record the case's initial and updated (if applicable) case classification status. (An explanation of classification status can be found in Appendix B-1 to the MDPH *SARS Case Report Form* [found at the end of this chapter]).
 - e. Accurately record all laboratory testing information available for the case.
 - f. If you have made several attempts to obtain case information, but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.

3. After completing the case report form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

Note: Do not send the form directly to the CDC.

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4, in coordination with the MDPH Division of Epidemiology and Immunization.



Section 4:

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (*105 CMR 300.130*)

Minimum Period of Isolation of Patient

Isolate for duration of illness and for at least ten days after resolution of fever, according to the most current recommendations of the CDC.

Minimum Period of Isolation of Contacts

Asymptomatic contacts should practice personal surveillance for fever and respiratory symptoms and report them to their health care provider immediately, should one or the other occur within ten days of the individual's last contact with the case. Febrile contacts or contacts with respiratory symptoms only shall be treated the same as a case for 72 hours, after which further management shall be in consultation with the LBOH or the MDPH.

B. Protection of Contacts of a Case

There is no immunization or prophylaxis for contacts of cases.

C. Managing Special Situations

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If you suspect an outbreak, for example in a group of returning travelers, contact the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The situation may warrant an investigation of clustered cases or implementation of effective prevention and control measures. The MDPH Division of Epidemiology and Immunization can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

D. Preventive Measures

Personal Preventive Measures/Education

1. Avoid close contact with people who have returned within ten days from a high-risk area if they are currently ill with symptoms consistent with SARS infection. (There is no need to avoid recent travelers who have no symptoms of SARS.)
2. Avoid close contact with a person who may have SARS by wearing a mask. In addition, the infected person can wear a mask as this can reduce the number of infected droplets coughed into the air.
3. Wash hands often with soap and warm water to help prevent the spread of SARS and many other viruses and bacteria. Alcohol hand gels and rubs may also be used to wash and decontaminate the hands.
4. Do not share food, drinks, or eating utensils with other people, especially if they are ill. This measure is important for preventing the spread of SARS and other germs.

A SARS Public Health Fact Sheet is available from the MDPH Division of Epidemiology and Immunization or on the MDPH website at www.mass.gov/dph. Click on the “Publications and Statistics” link, and select the “Public Health Fact Sheets” section under “Communicable Disease Control.”



ADDITIONAL INFORMATION

The formal CDC surveillance case definition for SARS—defined by a combination of clinical, epidemiologic, and laboratory criteria—is complex and subject to frequent change due to the ever increasing availability of knowledge about the disease. It should not affect the investigation or reporting of a case that fulfills the criteria in Section 2A. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2A.

Note: The most up-to-date CDC case definition for SARS can be found on the CDC website at www.cdc.gov/ncidod/sars/guidance/b/app1.htm.



REFERENCES

“Fact Sheet: Basic Information about SARS.” Centers for Disease Control and Prevention. January 13, 2004.
<www.cdc.gov/ncidod/sars>.

Heymann, D., ed. *Control of Communicable Diseases Manual, 18th Edition*. Washington, DC, American Public Health Association, 2004.

MDPH. *Regulation 105 CMR 300.000: Reportable Diseases, Surveillance, and Isolation and Quarantine Requirements*. MDPH, Promulgated November 4, 2005.

“Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2.” Centers for Disease Control and Prevention. May 3, 2005.
<www.cdc.gov/ncidod/sars/guidance/index.htm>.



FORMS & WORKSHEETS

Severe Acute Respiratory Syndrome (SARS)

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LBOH Action Steps

This form does not need to be submitted to MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to SARS case investigation activities.

LBOH staff should follow these steps when SARS is suspected in the community. For more detailed information, including disease epidemiology, reporting, case investigation and follow-up, refer to the preceding chapter.

Note: Case investigation of SARS in Massachusetts residents will, in most circumstances, be coordinated by the MDPH Division of Epidemiology and Immunization. The LBOH may be asked to assist with completion of the case report form and other case investigation and control activities.

- ☐ Immediately notify the MDPH Division of Epidemiology and Immunization, at (617) 983-6800 or (888) 658-2850, to report all confirmed or suspect case(s) of SARS.
- ☐ Obtain laboratory confirmation.
- ☐ Fill out the case report form (attach laboratory results).
- ☐ Work with MDPH to institute isolation and quarantine requirements (*105 CMR 300.200*), as they apply to a particular case.
- ☐ Send the completed case report form (with laboratory results) to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).